FG-MACT PPPPP-TEST CELLS
FLEXIBLE GROUP CONDITIONS
40 CFR Part 63, Subpart PPPPP covers major sources of HAPs.

Red text identifies options. Select the option that applies to the source and change the text to black. Delete red text that does not apply and renumber conditions if necessary.

Blue text is guidance or notes on the use of the template. Delete all blue text prior to issuing the final permit or submitting it with a permit application. Read through all conditions. If the permittee has control equipment, or wants the option to add control equipment in the future, use all the conditions in this template, selecting the appropriate control type for the tables. If there is currently no control or no plans to add control, eliminate the conditions that reference use of control (red conditions).

If this template is being used for an ROP Reopening or Renewal, and the MACT conditions were established in a PTI, the appropriate footnotes which reference enforceability must be added to each applicable condition in the template.

DESCRIPTION

Each new or reconstructed affected source containing engine test cells/stands used for testing uninstalled stationary or uninstalled mobile engines that are located at a major source of HAP emissions. An affected source is defined by Title 40 of the Code of Federal Regulations (CFR) 63.9290(a) as the collection of all equipment and activities associated with engine test cells/stands used for testing uninstalled stationary or uninstalled mobile engines located at a major source of HAP emissions. This section applies to engine test cells/stands that test internal combustion engines with a rated power of 25 horsepower or more.

The following information may be incorporated into the staff report as it applies to the source:

- An affected source is a new source if construction of the source commenced after May 14, 2002. **(40 CFR 63.9290(a)(2))**
- An affected source is reconstructed if it meets the criteria as defined in 40 CFR 63.2 and reconstruction commenced after May 14, 2002. **(40 CFR 63.9290(a)(3)))**
- For an affected source that commences construction or reconstruction before the date that the area source becomes major, compliance with the emission limitations should be at the time that the source becomes major. **(40 CFR 63.9295(b))**

Emission Units: Identify Emission Units in this Flexible Group

POLLUTION CONTROL EQUIPMENT

Identify specific control equipment used by the facility.

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. Carbon Monoxide (CO) or Total Hydrocarbons (THC)	20 ppmvd --OR-- 96 percent reduction in emissions	4-hour rolling average	Each New or Reconstructed Engine Test Cell/Stand	SC V.1 - V.5 & VI.1 – VI.8	**40 CFR 63.9300**
Limit is dry gas basis, corrected to 15 % O_2 content.					

2. The permittee shall be in compliance with the applicable emission limits at all times except during periods of startup, shutdown, or malfunction of the control device or associated monitoring equipment. **(40 CFR 63.9305(a))**

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. For any controlled engine test cell/stand, the permittee shall meet the operating limits, and demonstrate continuous compliance with the operating limits, specified in Table 2 of 40 CFR Part 63, Subpart PPPPP, as identified below. The permittee must establish the operating limits during the performance test according to the requirements in 40 CFR 63.9324. The operating limits shall be met at all times after they are established. (40 CFR 63.9302(a), **Table 2 of 40 CFR Part 63, Subpart PPPPP**)

Select the appropriate add-on control device and operating limit for the source.

Add-on Control Device	Operating Limit	Continuous Compliance Demonstration Method
Thermal oxidizer	a. The average combustion temperature in any 3-hour period must not fall below the combustion temperature limit established according to 40 CFR 63.9324(a).	i. Collect the combustion temperature data according to 40 CFR 63.9306(c); ii. Reduce the data to 3-hour block averages; and iii. Maintain the 3-hour average combustion temperature at or above the temperature limit.
Catalytic oxidizer	a. The average temperature measured just before the catalyst bed in any 3-hour period must not fall below the limit established according to 40 CFR 63.9324(b); and either	i. Collect the temperature data according to 40 CFR 63.9306(c); ii. Reduce the data to 3-hour block averages; and iii. Maintain the 3-hour average temperature before the catalyst bed at or above the temperature limit.
	b. Ensure that the average temperature difference across the catalyst bed in any 3-hour period does not fall below the temperature difference limit established according to 40 CFR 63.9324(b)(2); or	i. Collect the temperature data according to 40 CFR 63.9306(c); ii. Reduce the data to 3-hour block averages; and iii. Maintain the 3-hour average temperature difference at or above the temperature difference limit.
	c. Develop and implement an inspection and maintenance plan according to 40 CFR 63.9324(b)(3) and (4).	i. Comply with the inspection and maintenance plan developed according to 40 CFR 63.9324(b)(3) and (4).
Emission capture system that is a PTE according to 40 CFR 63.9322(a)	a. The direction of the air flow at all times must be into the enclosure; and either b. The average facial velocity of air through all-natural draft openings in the enclosure must be at least 200 feet per minute; or c. The pressure drop across the enclosure must be at least 0.007 inch H_2O, as established in Method 204 of Appendix M	i. Collect the direction of air flow, and either the facial velocity of air through all-natural draft openings according to 40 CFR 63.9306(d)(1) or the pressure drop across the enclosure according to 40 CFR 63.9306(d)(2); and ii. Maintain the facial velocity of air flow through all-natural draft openings or the pressure drop at or above the facial velocity limit or pressure drop limit and maintain the direction of air flow

Add-on Control Device	Operating Limit	Continuous Compliance Demonstration Method
	to 40 CFR 51.	into the enclosure at all times.
Emission capture system that is not a PTE according to 40 CFR 63.9322(a)	a. The average gas volumetric flow rate or duct static pressure in each duct between a capture device and add-on control device inlet in any 3-hour period must not fall below the average volumetric flow rate or duct static pressure limit established for that capture device according to 40 CFR 63.9306(d).	i. Collect the gas volumetric flow rate or duct static pressure for each capture device according to 40 CFR 63.9306(d); ii. Reduce the data to 3-hour block averages; and iii. Maintain the 3-hour average gas volumetric flow rate or duct static pressure for each capture device at or above the gas volumetric flow rate or duct static pressure limit.

2. For any controlled engine test cell/stand using add-on control other than that listed in Table 2 of 40 CFR Part 63, Subpart PPPPP, or for approval to monitor an alternative parameter and comply with a different operating limit, the permittee shall apply to the Administrator for approval of alternative monitoring under 40 CFR 63.8(f). **(40 CFR 63.9302(b))**

3. The permittee shall develop and implement a written startup, shutdown and malfunction plan (SSMP) for emission control devices and associated monitoring equipment according to the provisions of 40 CFR 63.6(e)(3). The permittee shall operate in accordance with the SSMP during periods of SSM. This plan shall apply only to emission control devices and not to engine test cells/stands. **(40 CFR 63.9305(c), 40 CFR 63.9340(c))**

4. The permittee shall operate and maintain each engine test cell/stand, air pollution control device, and monitoring equipment in a manner consistent with good engineering practices to minimize emissions at all times. **(40 CFR 63.9305(b))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. For any engine test cell/stand using add-on control, the permittee shall not operate FG-MACT PPPPP-TEST CELLS unless the CONTROL DEVICE(S) IS/ARE installed, maintained, and operated in a satisfactory manner. **(40 CFR 63.9302 or 63.9324)**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii), 40 CFR 63.9360)**

1. Within 180 calendar days after initial startup, for each engine test cell/stand complying with the CO or THC outlet concentration emission limitation, the permittee shall demonstrate initial compliance with the applicable emission limitation using USEPA Methods 3A and 10 of Appendix A of 40 CFR Part 60 for CO measurement or USEPA Method 25A of Appendix A of 40 CFR Part 60 for THC measurement, according to the procedures in 40 CFR 63.9320 and the requirements in Table 3 of 40 CFR Part 63, Subpart PPPPP. This initial demonstration shall consist of the first 4-hour rolling average after a successful performance evaluation. The outlet concentration of CO or THC emissions shall be corrected to 15 percent O_2 content. **(40 CFR 63.9320(c), 40 CFR 63.9321, Table 3 of 40 CFR Part 63, Subpart PPPPP)**

OR

1. Within 180 calendar days after initial startup, for each engine test cell/stand complying with the CO or THC outlet concentration emission limitation, the permittee shall demonstrate initial compliance with the applicable emission limitation using a CEMS at the outlet of the engine test cell/stand or emission control device, according to the procedures in 40 CFR 63.9320 and the requirements in Table 3 of 40 CFR Part 63, Subpart PPPPP. This initial demonstration shall be conducted immediately following a successful performance evaluation of the CEMS as required in 40 CFR 63.9320(b) and shall consist of the first 4-hour rolling average of measurements. The CO or THC concentration must be corrected to 15 percent O_2 content, dry basis using Equation 1 in 40 CFR 63.9320. **(40 CFR 63.9320(c), 40 CFR 63.9321, Table 3 of 40 CFR Part 63, Subpart PPPPP)**

2. Within 180 calendar days after initial startup, for each engine test cell/stand complying with the CO or THC percent reduction emission limitation, the permittee shall conduct an initial performance test to determine the

capture and control efficiencies of the equipment and to establish operating limits to be achieved on a continuous basis. This initial demonstration shall use the first 4-hour rolling average after a successful performance evaluation. The inlet and outlet measurements shall be on a dry basis and corrected to 15 percent O_2 content. **(40 CFR 63.9320(c), 40 CFR 63.9321, Table 3 of 40 CFR Part 63, Subpart PPPPP)**

OR

2. Within 180 calendar days after initial startup, for each engine test cell/stand complying with the CO or THC percent reduction emission limitation, the permittee shall demonstrate initial compliance with the applicable emission limitation using a CEMS at both the inlet and outlet of the emission control device. This initial demonstration shall be conducted immediately following a successful performance evaluation of the CEMS as required in 40 CFR 63.9320(b) and shall consist of the first 4-hour rolling average of measurements. The inlet and outlet CO or THC concentration must be corrected to 15 percent O_2 content, using Equation 1 in 40 CFR 63.9320. The reduction in CO or THC is calculated using Equation 2 in 40 CFR 63.9320. **(40 CFR 63.9320(c), 40 CFR 63.9321, Table 3 of 40 CFR Part 63, Subpart PPPPP)**

3. The permittee shall conduct each performance test required by 40 CFR 63.9310 according to the requirements of 40 CFR 63.7(e)(1) and under the conditions 63.9321(a)(1) and (2) unless a waiver of the performance test is obtained according to 40 CFR 63.7(h). **(40 CFR 63.9321)**

4. The permittee shall conduct each performance test required by 40 CFR 63.9310, of an emission capture system and add-on control device to determine capture efficiency and emission destruction or removal efficiency, according to the procedures and test methods in 40 CFR 63.9322 and 40 CFR 63.9323, unless a waiver is obtained according to the provisions of 40 CFR 63.7(h). **(40 CFR 63.9321(b))**

5. The permittee shall establish the operating limits required by 40 CFR 63.9302 during the performance test required by 40 CFR 63.9310, according to **(select the appropriate control(s))**

   - 40 CFR 63.9324(a)(1) and (2) for a thermal oxidizer,
   - 40 CFR 63.9324(b)(1) and (2) or (b)(3) and (4) for a catalytic oxidizer,
   - 40 CFR 63.9324(c)(1) and (2) for either the gas volumetric flow rate or duct static pressure for each capture device that is not part of a PTE that meets the criteria of 40 CFR 63.9322(a),
   - the operating limit specified in Table 3 of 40 CFR Part 63, Subpart PPPPP for a PTE, unless approval is received for alternate monitoring and operation limits under 40 CFR 63.8(f). **(40 CFR 63.9324)**

6. The permittee must demonstrate continuous compliance with each applicable CO or THC concentration emission limitation by: **(40 CFR 63.9340)**

   a. Collecting the CPMS data according to 40 CFR 63.9306(a), and reducing the measurements to 1-hour averages; or

   b. Collecting the CEMS data according to 40 CFR 63.9307(a), reducing the measurements to 1-hour averages, and correcting them to 15 percent O_2 content, dry basis, according to 40 CFR 63.9320.

OR

6. The permittee must demonstrate continuous compliance with the CO or THC percent reduction emission limitation by: **(40 CFR 63.9340)**

   a. Collecting the CPMS data according to 40 CFR 63.9306(a), and reducing the measurements to 1-hour averages; or

   b. Collecting the CEMS data according to 40 CFR 63.9307(b), reducing the measurements to 1-hour averages, correcting them to 15 percent O_2 content, dry basis, and calculating the CO or THC percent reduction according to 40 CFR 63.9320.

See Appendix 5

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii), 40 CFR 63.9360)**

40 CFR 63.9301 requires that the permittee use continuous parameter monitoring systems (CPMS) or continuous emission monitors (CEMS). Choose the applicable permit conditions from 1-4 below if you use a CPMS or choose the applicable permit conditions from 5-6 below if you use a CEMS.

1. For each engine test cell/stand using a thermal oxidizer for control, the permittee shall install, operate, and maintain a gas temperature monitor in the firebox of the thermal oxidizer or in the duct immediately downstream of the firebox before any substantial heat exchange occurs. The monitor shall meet the requirements of 40 CFR 63.9306(a)(1) through (7) and each gas temperature monitoring device shall meet the requirements in 40 CFR 63.9306(c)(3)(i) through (vii). **(40 CFR 63.9306(c)(1) and (3))**

2. For each engine test cell/stand using a catalytic oxidizer for control, the permittee shall install, operate, and maintain a gas temperature monitor as follows:

   a. If operating limits are established pursuant to 40 CFR 63.9324(b)(1) and (2), install gas temperature monitors both immediately upstream and downstream of the catalyst bed to measure the temperature difference across the bed. **(40 CFR 63.9306(c)(2))**

   b. If operating limits are established pursuant to 40 CFR 63.9324(b)(3) and (4), install a gas temperature monitor immediately upstream the catalyst bed. **(40 CFR 63.9306(c)(2))**

   c. The monitor shall meet the requirements of 40 CFR 63.9306(a)(1) through (7) and each gas temperature monitoring device shall meet the requirements in 40 CFR 63.9306(c)(3)(i) through (vii). **(40 CFR 63.9306(c)(2) and (3))**

3. For each engine test cell/stand using an emission capture system for control, the permittee shall install, operate, and maintain the following monitoring devices:

   a. A flow measurement device which meets the requirements in 40 CFR 63.9306(a) and 63.9306(d)(1)(i) through (d)(1)(iv). **(40 CFR 63.9306(d)(1))**

OR

   b. A pressure drop measurement device which meets the requirements in 40 CFR 63.9306(a) and 63.9306(d)(2)(i) through (d)(2)(vi). **(40 CFR 63.9306(d)(2))**

4. For each engine test cell/stand using add-on control or emission capture system that contains a bypass line, the permittee shall meet the requirements of 40 CFR 63.9306(a)(3) through (5) and 63.9306(b)(1) and (2). **(40 CFR 63.9306(b))**

5. If a continuous emission monitoring system (CEMS) is used, it must be installed, operated and maintained to monitor carbon monoxide (CO) or total hydrocarbons (THC) and oxygen at the outlet of the exhaust system of the engine test cell/stand or at the outlet of the emission control device. The CEMS must be installed, operated and maintained according to the requirements in 40 CFR 63.9307(c)(1) through (4) and 63.9307(d)(1) and (2). **(40 CFR 63.9307(a))**

6. If a continuous emission monitoring system (CEMS) is used to comply with the carbon monoxide (CO) or total hydrocarbon (THC) percent reduction emission limitation, it shall be installed, operated and maintained to monitor the CO or THC and oxygen at both the inlet and the outlet of the emission control device. The CEMS must be installed, operated and maintained according to the requirements in 40 CFR 63.9307(c)(1) through (4) and 63.9307(d)(1) and (2), **(40 CFR 63.9307(b))**

7. The permittee shall conduct all monitoring in continuous operation at all times the engine test cells/stands are operating, except for monitoring malfunctions, associated repairs, and required quality assurance or quality control activities as specified in 40 CFR 63.9335. **(40 CFR 63.9335)**

8. During the performance test, the permittee shall perform the applicable monitoring and recordkeeping in accordance with 40 CFR 63.9324 to establish the emission capture system and add-on control device operating limits. **(40 CFR 63.9324)**

9. The permittee shall keep all records required by 40 CFR 63.9355 in the format and timeframes outlined in 40 CFR 63.9360. **(40 CFR 63.9355, 40 CFR 63.9360)**

10. The permittee shall maintain, at a minimum, the following records as of the applicable compliance date:
Select conditions c, f, and g, and choose the applicable permit conditions from d-e below if you use a CPMS, or select condition l below if you use a CEMS.

a. A copy of each notification and report that is submitted to comply with Subpart PPPPP, and the documentation supporting each notification as specified in 40 CFR 63.9355(a)(1). **(40 CFR 63.9355(a)(1))**

b. Records of performance evaluations as required in 40 CFR 63.10(b)(2)(viii). **(40 CFR 63.9355(a)(2))**

c. Records of the occurrence and duration of each malfunction of air pollution control equipment, if applicable, as required in 40 CFR 63.10(b)(2)(ii). **(40 CFR 63.9355(a)(3))**

d. Records of all maintenance on the air pollution control equipment, if applicable, as required in 40 CFR 63.10(b)(iii). **(40 CFR 63.9355(a)(4))**

e. The calculations of the mass of organic HAP emission reduction by emission capture systems and add-on control devices. **(40 CFR 63.9355(a)(5))**

f. For each CPMS, records of the data and calculations used to establish the emission capture and add-on control device operating limits as specified in 40 CFR 63.9324 and to document compliance with each applicable operating limit specified in Table 2 of 40 CFR Part 63, Subpart PPPPP. **(40 CFR 63.9355(b)(3) and (7))**

g. For each capture system that is a PTE, the data and documentation used to support a determination that the capture system meets the criteria in Method 204 of Appendix M of 40 CFR Part 51 for a PTE and has a capture efficiency of 100 percent, as specified in 40 CFR 63.9322(a). **(40 CFR 63.9355(b)(4))**

h. For each capture system that is not a PTE, the data and documentation used to determine capture efficiency according to the requirements specified in 40 CFR 63.9321 and 40 CFR 63.9322(b) through (e), including the applicable records specified in 40 CFR 63.9355(b)(5)(i) and (ii). **(40 CFR 63.9355(b)(5))**

i. The records specified in 40 CFR 63.9355(b)(6)(i) and (ii) for each add-on control device organic HAP destruction efficiency determination as specified in 40 CFR 63.9323. **(40 CFR 63.9355(b)(6))**

j. For each deviation, records of whether the deviation occurred during a period of SSM of the control device and associated monitoring equipment. **(40 CFR 63.9355(b)(1))**

k. Records in 40 CFR 63(e)(3)(iii) through (v) related to SSM. **(40 CFR 63.9355(b)(2))**

l. For each CEMS, records as described in 40 CFR 63.9355(c)(1) through (4). **(40 CFR 63.9355(c))**

m. The records required in Table 5 of 40 CFR Part 63, Subpart PPPPP, to show continuous compliance with each applicable emission limitation. **(40 CFR 63.9355(d), Table 5 of 40 CFR Part 63, Subpart PPPPP)**

See Appendices {Enter 3, 4, and/or 7}

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**

2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**

3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**

4. The permittee shall submit applicable notifications specified in 40 CFR 63.8(e), 63.8(f)(4) and (6), 63.9(b), (g)(1) and (2), and (h), an Initial Notification and a Notification of Compliance Status according to 40 CFR 63.9(h)(2)(ii) by the dates specified. **(40 CFR 63.9330(b), 40 CFR 63.9345, 40 CFR Part 63, Subparts A and PPPPP)**

5. The permittee shall submit all semiannual compliance reports and performance test reports by the applicable dates specified in 40 CFR 63.9350(a)(1) through (6). **(40 CFR 63.9350(a))**

6. If there is no deviation from the applicable emission limitation and the CEMS or CPMS was not out of control according to 63.8(c)(7), the semiannual compliance report must contain the information described in 40 CFR 63.9350(b)(1) through (4). **(40 CFR 63.9350(b))**

7. For each deviation from an emission limitation, the semiannual compliance report must include the information in 40 CFR 63.9350(b)(1) through (3) and (c)(1) through (4). **(40 CFR 63.9340, 40 CFR 63.9350(c))**

8. For each CEMS or CPMS deviation, the semiannual compliance report must include the information in 40 CFR 63.9350(b)(1) through (3) and (d)(1) through (10). **(40 CFR 63.9350(d))**

9. If the affected source uses an emission capture system and add-on control, and a startup, shutdown, or malfunction of a control device or associated monitoring equipment occurs during the semiannual reporting period that is not consistent with the SSMP, the permittee shall submit a SSM report according to the requirements in 40 CFR 63.10(d)(5)(ii). **(40 CFR 63.9350(e))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Diameter/Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with all applicable provisions of the National Emission Standards for Hazardous Air Pollutants, as specified in 40 CFR Part 63, Subpart A and Subpart PPPPP for Engine Test Cells/Stands by the initial compliance date. **(40 CFR Part 63, Subparts A and PPPPP)**

Footnotes:
[1]This condition is state only enforceable and was established pursuant to Rule 201(1)(b).
[2]This condition is federally enforceable and was established pursuant to Rule 201(1)(a).